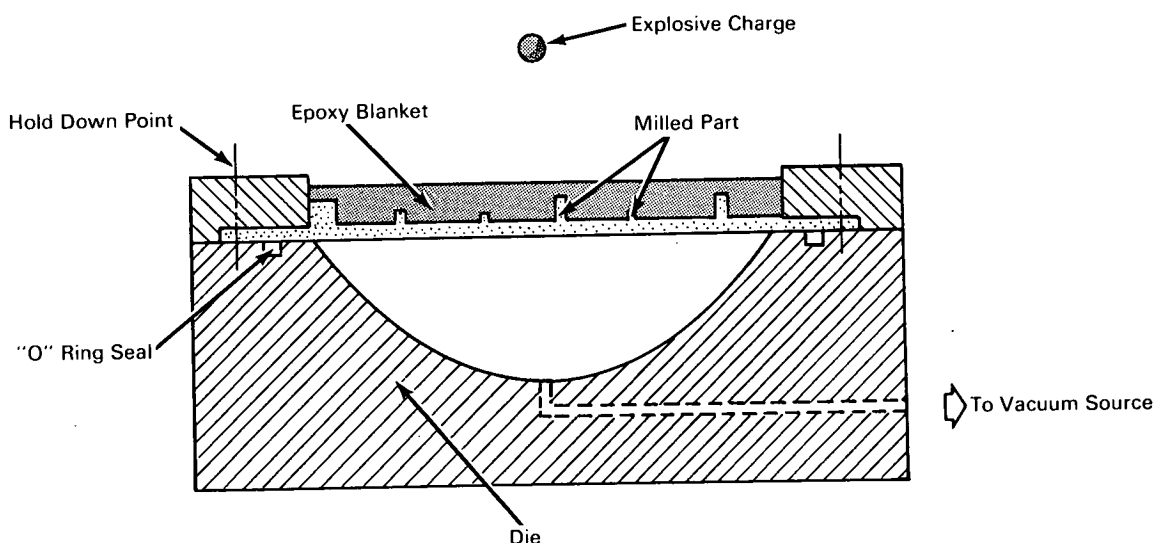


NASA TECH BRIEF



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Epoxy Blanket Protects Milled Part During Explosive Forming



The problem:

To use explosive forming for large and complex structural parts having various chemically milled or machined sections, without causing damage to protruding members. Control of the energy released by the explosive charge is extremely difficult when the specimen or part is not homogeneous in size and configuration.

The solution:

An epoxy blanket that uniformly covers the entire exposed surface of the part and fills all voids and machined areas. This supports rib sections and uniformly protects the entire part from the energy of the charge during forming.

How it's done:

The part is first treated with a commercial wax, silicon spray, or fluorocarbon coating that will prevent

the epoxy blanket from adhering to it. A two-component, room-temperature curing casting liquid is poured over the milled part set in a framelike fixture with side walls to the height of desired blanket thickness. The casting material consists of a medium viscosity hardener in proportions of 100 parts of resin to 27 parts of hardener by weight. This material cures rapidly in large masses to a tough, resilient product that is resistant to abrasion, chemicals, solvents, and high impact loads.

Following application of the epoxy blanket, standard explosive forming procedures, employing conventional dies, hold-down fixtures and vacuum techniques, are used to achieve the desired part configuration. After forming, the part is removed from the die and the epoxy blanket is readily peeled from its surface.

(continued overleaf)

Notes:

1. Due to its resilient characteristic after hardening, the epoxy blanket can be used for successive forming shots on the same part. It is discarded when forming is completed.
2. This casting system hardens in 10 to 15 minutes, making it attractive for a volume production operation.
3. A related innovation is described in NASA Tech Brief B65-10170, June 1965.
5. Inquiries may also be directed to:
Technology Utilization Officer
Marshall Space Flight Center
Huntsville, Alabama, 35812
Reference: B66-10029

Patent status:

No patent action is contemplated by NASA.

Source: North American Aviation, Inc.
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